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## “Dr.” Franklin

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No Doctor of Medicine was Benjamin Franklin, but his knowledge of the subject and contributions to it were far greater than those of many of his contemporaries who laid claim to the title. It is probably not inaccurate to say that we would know Franklin today as the father of American medicine had he not been so eminent in other fields.

The medical profession may claim Franklin as one of its own for he was a member of the Royal Medical Society of Paris and an honorary member of the Medical Society of London, in addition to holding membership in several medical societies in the United States.

As a champion of fresh air, exercise, and frequent bathing he stands as an American pioneer in the field of hygiene. His advocacy of inoculation and

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studies in the vital statistics of smallpox attest his discerning interest in preventive medicine. To ophthalmology he made the important contribution of bifocal lenses. His contributions to the diagnosis of lead poisoning are classical. His able unmasking of mesmerism makes psychiatry his debtor.

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Franklin helped found not only the first hospital, but also the first medical school in America. His account of the founding of the Pennsylvania Hospital, told in his autobiography, demonstrates that practical ingenuity which runs like a stout cord through the fabric of his life. The successful method of raising funds for America's first hospital devised by Franklin has been copied by many hospitals and other health and welfare agencies in the succeeding generations down to this day.

Franklin not only lent the weight of his influence to the project initiated by Doctor Thomas Bond in 1751 of "establishing a hospital in Philadelphia . . . for the reception and cure of poor sick persons, whether inhabitants of the province or strangers," but stimulated subscriptions by a newspaper campaign. Later he introduced the system of "matching" funds secured by subscriptions with an appropriation from the Pennsylvania Assembly.

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In a time when little was known of what we call hygiene and less was practiced, Franklin was a champion of moderation in eating and drinking, of fresh air for the well and ill, of daily exercising, of frequent bathing.

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Franklin was a great proselytist and seldom lost a useful opportunity of trying to win others to his theories. John Adams has left us the following account of an incident that occurred in 1776 when circumstances compelled him to bunk with Franklin:

"At Brunswick, but one bed could be procured for Dr. Franklin and me, in a chamber little larger than the bed, without a chimney, and with only one small window. The window was open, and I who was an invalid and afraid of the air of night, shut it close. 'Oh!' says Franklin, 'don't shut the window, we shall be suffocated.' I answered I was afraid of the evening air. Dr. Franklin replied, 'The air within this chamber will soon be, and indeed is now, worse than that without doors. Come, open the window and come to bed, and I will convince you. I believe you are not acquainted with my theory of colds?' Opening the window, and leaping into bed, I said I had read his letters to Dr. Cooper, in which he had advanced, that nobody ever got cold by going into a cold church or any other cold air, but the theory was so little consistent with my experience, that I thought it a paradox. However, I had so much curiosity to hear his reasons that I would run the risk of a cold. The Dr. then began to harangue upon air and cold, and respiration and perspiration, with which I was so much amused that I soon fell asleep, and left him and his philosophy together, but I believe that they were equally sound and insensible within a few minutes after me, for the last words I heard were pronounced as he was more than half asleep" . . .<sup>1</sup>

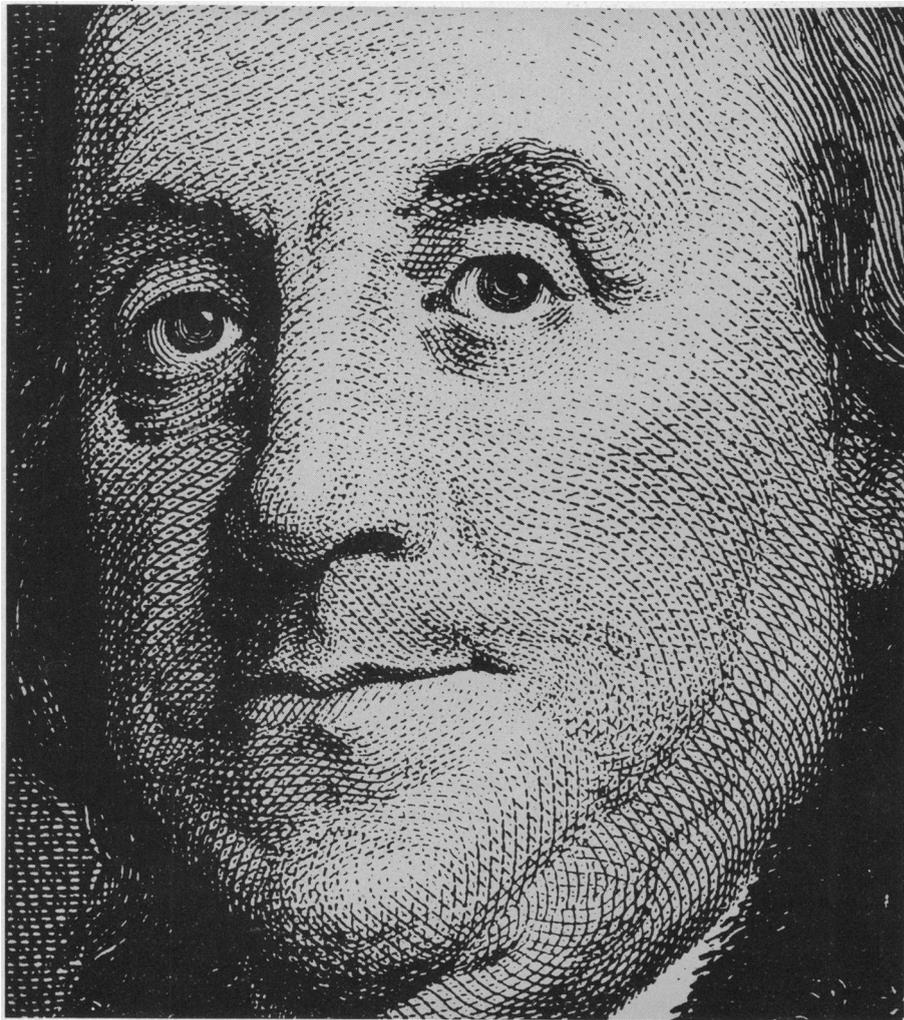
Adams, who lived to the venerable age of 91 years, claimed that Dr. Franklin died as a result of his own theory since Franklin finally succumbed (at the age of 84 years) to chest complications. He sat before an open window five days before he died!

Smallpox in Franklin's day was a serious disease which almost everyone contracted sooner or later. It appears from an ad in Franklin's *Pennsylvania Gazette* that to have had the smallpox was an asset.

(For Sale) "A Negroe wench about 15 years old, has had the smallpox, talks English, etc. Inquire to the printer hereof."<sup>2</sup>

The practice of inoculation was introduced into America about 1721 through the interest of Cotton Mather and was first performed by Dr. Boylstone at





Boston. At that time Franklin was an apprentice printer on the *New England Courant*, edited by his brother James. The *Courant*, at odds with Mather, opposed the “doubtful and dangerous practice” of inoculation, but Franklin seems not to have shared this editorial point of view since he was throughout his life a champion of the practice.

“In 1736,” he related, “I lost one of my sons, a fine boy of four years old, by the smallpox, taken in the common way. I long regretted bitterly, and still regret that I had not given it to him by inoculation. This I mention for the sake of parents who omit that operation on the supposition that they should never forgive themselves if a child died under it, my example showing that regret may be the same either way, and that, therefore, the safer should be chosen.”<sup>1</sup>

Many years later, Franklin persuaded Dr. William Heberden of London to write an account of the success of inoculation as a means of protection against smallpox. Franklin wrote a four-page preface which, in a day when vital statistics was hardly a science, is a masterpiece of statistical persuasion.

“About 1753 or 54, the small-pox made its appearance in Boston, New England. It had not spread in the town for many years before, so that there were a great number of inhabitants to have it. At first, endeavors were used to prevent its spreading, by removing the sick, or guarding the houses in which they were; and with the same view Inoculation was forbidden; but when it was

found that these endeavors were fruitless, the distemper breaking out in different quarters of the town, and increasing, Inoculation was then permitted.

“Upon this, all that inclined to Inoculation for themselves or families hurried into it precipitately, fearing the infection might otherwise be taken in the common way; the numbers inoculated in every neighborhood spread the infection likewise more speedily among those who did not chuse Inoculation; so that in a few months the distemper went thro’ the town, and was extinct; and the trade of the town suffered only a short interruption, compar’d with what had been usual in former times, the country people during the seasons of that sickness fearing all intercourse with the town.

“As the practice of Inoculation always divided people into parties, some contending warmly for it, and others as strongly against it; the latter asserting that the advantages pretended were imaginary, and that the Surgeons, from views of interest, conceal’d or diminish’d the true number of deaths occasion’d by Inoculation, and magnify’d the number of those who died of the Small-pox in the common way: It was resolved by the Magistrates of the town, to cause a strict and impartial enquiry to be made by the Constables of each ward, who were to give their returns upon oath; and that the enquiry might be made more strictly and impartially, some of the partisans for and against the practice were join’d as assistants to the officers and accompany’ed them in their progress through the wards from house to house. Their several returns being received, and summed up together, the numbers turn’d out as follows:

Had the Small-pox in the common way		Of these died	
<i>Whites</i>	<i>Blacks</i>	<i>Whites</i>	<i>Blacks</i>
5059	485	452 (9%)	62 (13%)
Received the distemper by Inoculation		Of these died	
<i>Whites</i>	<i>Blacks</i>	<i>Whites</i>	<i>Blacks</i>
1974	139	23 (1%)	7 (5%)

“It appeared by this account that the death of persons inoculated, were more in proportion at this time than had been formerly observed, being something more than one in a hundred. The favourers of Inoculation however would not allow that this was owing to any error in the former accounts, but rather to the Inoculating at this time many unfit subjects, partly through the impatience of people who would not wait the necessary preparation, lest they should take it in the common way; and partly from the importunity of parents prevailing with the Surgeons against their judgment and advice to inoculate weak children, labouring under other disorders; because the parents could not immediately remove them out of the way of the distemper, and thought they would at least stand a better chance by being inoculated than in taking the infection as they would probably do, in the common way.”<sup>1</sup>

In Philadelphia, according to Franklin, mortality from inoculation was only half as great (1 in 200) as in Boston (1 in 100). This he believed due to the longer periods between epidemics in Boston with a consequent greater number of adults to be inoculated.

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Franklin was not the first to suspect lead as the cause of “Dry Bellyach, with loss of the use of the limbs”, but his classical letter to Benjamin Vaughan in 1780 summarizes evidence and makes out the case against lead worthy of a modern textbook.

“The first Thing I remember of this kind was a general Discourse in Boston, when I was a Boy of a Complaint from North Carolina against New England Rum, that it poison’d their People, giving them the Dry Bellyach, with Loss of the Use of their Limbs. The Distilleries being examin’d on the Occasion, it was found that several of them used leaden Still-heads and Worms, and the Physicians were of Opinion, that the Mischief was occasioned by the Use of



Lead. The Legislature of Massachusetts thereupon pass'd an Act, prohibiting under severe Penalties the Use of such Still-heads and Worms thereafter. Inclos'd I send you a Copy of the Acct. taken from my printed Law-book.

"In 1724, being in London, I went to work in the Printing-House of Mr. Palmer, Bartholomew Close, as a Compositor. I there found a Practice, I had never seen before, of drying a case of Types (which are wet in Distribution) by placing it sloping before the fire. I found this had the Additional Advantage when the Types were not only dry'd but heated, of being comfortable to the Hands working over them in cold weather. I therefore sometimes heated my case when the Types did not want drying. But an old Workman, observing it, advis'd me not to do so, telling me I might lose the use of my hands by it, as two of our Companions had nearly done, one of whom that us'd to earn his Guinea a Week, could not then make more than ten shillings, and the other, who had the Dangles but seven and six-pence. This, with a kind of obscure Pain, that I sometimes felt, as it were in the Bones of my Hand when working over the Types made very hot, induced me to omit this practice. But talking afterwards with Mr. James, a Letter-founder in the same Close, and asking him if his People, who work'd over the little Furnaces of melted Metal, were not subject to that Disorder; he made light of any danger from the effluvia, but ascribed it to the Particles of the Metal swallow'd with their Food by slovenly Workmen, who went to their Meals after handling the Metal, without well washing their Fingers, so that some of the Metalline Particles were taken off by their Bread and eaten with it. This appeared to have some Reason in it. But the Pain I had experienc'd made me still afraid of those Effluvia.

"Being in Derbishire at some of the Furnaces for Smelting of Lead Ore, I was told, that the Smoke of those Furnaces was pernicious to the neighboring Grass and other Vegetables; but I do not recollect to have heard anything of the Effect of such Vegetables eaten by Animals. It may be well to make the Enquiry.

"In America I have often observ'd that on the Roofs of our shingled Houses, where Moss is apt to grow in northern Exposures, if there be any thing on the Roof painted with white Lead, such as Balusters, or Frames of domant Windows, &c, there is constantly a Streak on the Shingles from such Paint down to the Eaves, on which no Moss will grow, but the wood remains, constantly clean and free from it. We seldom drink Rain Water that falls on our Houses; and if we did, perhaps the small quantity of Lead descending from such Paint might not be sufficient to produce any sensible ill Effect on our Bodies. But I have been told of a Case in Europe, I forgot the Place, where a whole family was afflicted with what we call Dry Bellyach, or Colica Pictorum, by drinking Rain Water. It was at a Country-Seat, which, being situated too high to have the Advantage of a Well, was supply'd with Water from a Tank, which received the Water from the leaded Roofs. This had been drunk several Years without Mischief; but some young Trees planted near the House growing up above the Roof, and shedding their leaves upon it, it was suppos'd that an Acid in those Leaves had corroded the Lead they cover'd and furnish'd the Water of that with its baneful Particles and Qualities.

"When I was in Paris with Sir John Pringle in 1767, he visited *La Charite*, a hospital particularly famous for the Cure of that Malady, and brought from thence a Pamphlet containing a List of the Names of Persons, specifying their Professions or Trades, who had been cured there. I had the Curiosity to examine that List, and found that all the patients were of Trades, that, some way or other, use or work in lead, such as Plumbers, Glaziers, Painters, &c., excepting only two kinds, Stonecutters and Soldiers. These I could not reconcile to my Notion, that Lead was the cause of that Disorder. But on my mentioning this Difficulty to a Physician of that Hospital, he inform'd me that the Stonecutters are continually using melted Lead to fix the Ends of Iron Balustrades in Stone; and that the Soldiers had been employ'd by Painters, as Labourers, in Grinding of Colours.



"You will see, that the Opinion of this mischievous Effect from Lead is at least above Sixty Years Old; and you will observe with Concern how long a useful Truth may be known and exist, before it is generally receiv'd and practis'd on." <sup>1</sup>

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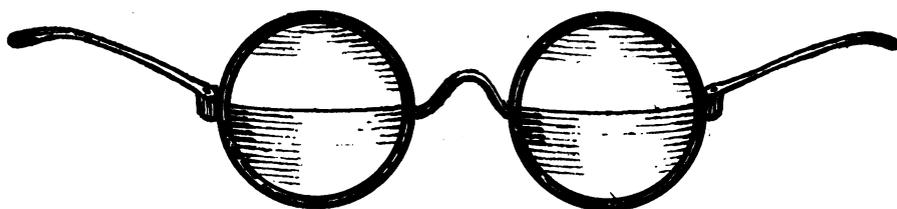
Franklin's most memorable medical exploit was his exposure of Mesmerism, a quackery whose financial success is rivaled only by such up-to-date nostrums as faith healing and patent medicines. Mesmer came to Paris after he was forced to leave Vienna for practicing his fraudulent animal magnetism. Among the gay and idle French nobility of Paris, "the laying on of hands" became a rage. Finally, the King appointed Dr. Franklin and four celebrated physicians from the Faculty of Paris to investigate and report on the practice of animal magnetism. Franklin appears to have been the guiding spirit of the investigation and to have written the final reports. Using the experimental method, the commission subjected selected patients suffering from a variety of maladies to the action of the supposed animal magnetic fluid. The results were negative.

In a private report Franklin called attention especially to the dangers of home treatments where women were treated by long-continued pressure of hands of the operator (always a young man) on the lower abdomen.

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Were all the rest of Franklin's medical contributions to be forgotten, millions of mature men and women would still be debtors to his memory for one of his most useful and casual discoveries—bifocal lenses. Here as in everything else he approached the frontiers of knowledge as a practical housewife would approach the pantry. The approach was in response to a need. The expectation was to find something useful. He needed bifocal lenses. Let him tell you why.

"I imagine it will be found pretty generally true, that the same Convexity of Glass through which a Man sees clearest and best at the Distance proper for Reading, is not the best for greater Distances. I therefore had formerly two Pair of Spectacles which I shifted occasionally, as in travelling I sometimes read, and often wanted to regard the Prospects. Finding this Change troublesome, and not always sufficiently ready, I had the Glasses cut, and half of each kind associated in the same Circle, thus



"By this means, as I wear my Spectacles constantly, I have only to move my Eyes up or down, as I want to see distinctly far or near, the proper Glasses being always ready. This I find more particularly convenient since my being in France, the Glasses that serve me best at Tables to see what I eat, not being the best to see the Faces of those on the other Side of the Table who speak to me; and when one's Ears are not well accustomed to the Sounds of a Language, a Sight of the Movements in the Features of him that speaks helps to explain, so I understand French better by the help of my Spectacles . . . <sup>1</sup>

#### References

1. Pepper, W.: The medical side of Benjamin Franklin. William J. Campbell, Philadelphia, 1911.
2. Van Doren, C.: Benjamin Franklin. Viking Press, Inc., New York, 1938.

